The effects of current income and expected change in future income on stated preferences for environmental improvements

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ABSTRACT

We formulate and test the hypothesis that expectations regarding changes in future income influences the WTP for environmental goods. For valuation of environmental goods in forests and other habitats in Denmark, we find that both current income and expected changes in future income are significant determinants for preferences. The effect of income on WTP seems to be caused by changes in preferences for environmental attributes rather than by marginal utility of income. The results suggest that to evaluate the distributional impacts of environmental improvements, researchers need a better measure of expected future consumption options than current income.

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Introduction

It is widely believed that people's emphasis on environmental goods and services increase with increasing income, and should be reflected in an increased marginal willingness to pay (WTP) for

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improvements in such goods. Therefore income sensitivity of WTP-measures has long been considered an indicator of the validity and reliability (Mitchell and Carson, 1989) of stated preference studies, as it may indicate whether respondents take the budget constraint seriously. However, many studies fail to find such a relationship between WTP and current income (see Jacobsen and Hanley, 2009), and even where found, the estimated – often small – sensitivity has caused debate on how sensitive WTP is to respondent income (Bateman et al., 2002). This is an issue of considerable policy relevance as it has clear implications for distributional effects of the environmental policies (Flores and Carson, 1997), and distribution of relative gains or losses across income classes is a core concern in everyday politics. Because of the fact that environmental goods are often quantity rationed, the income sensitivity of WTP for environmental goods may take on a range of values. Arguments have been given for WTP for the environmental goods to be progressively distributed, i.e. the income elasticity of WTP is larger than one. But more often WTP seems to be regressively distributed (Broberg, 2010; Kriström and Riera, 1996), implying that WTP increases less than proportional to income.

In this paper, we investigate the hypothesis that the mixed evidence may be a result of the commonly applied measure of income, being current income, is not fully adequate; specifically that it ignores the role of expected changes in future income for respondents. Economic theory suggests that current income may be a less than perfect measure of consumption options. The general life cycle income hypothesis (Modigliani, 1949) and the permanent income hypothesis (Friedman, 1957) both suggest that we may expect respondents to take their wealth and future income into account when answering hypothetical WTP questions. Often the payment vehicle used suggests that payments will continue either for a specified number of years (Amigues et al., 2002) or be permanent in recurrence (Jacobsen et al., 2011). Such framing makes it likely that respondents include more than current income in their considerations of future consumption possibilities and WTP than in cases where once-and-for-all payments are asked for. In addition, environmental goods often have a very long time provision perspective, especially for non-use values such as existence and bequest values. Thus, not only the payment but also the good has a long time perspective.

In choice experiments (CE) the marginal WTP measure for each attribute is derived as the ratio of the attribute parameter to the price variable. Thus, when estimating how income affect WTP two ways must be considered: The effect could be through the price parameter, which is the expected effect on the marginal utility of income (e.g. Brown and Gregory, 1999); or through a systematic change in preferences for the different environmental attributes across income groups. These considerations lead to the main hypotheses tested in this paper, namely that respondents' expectations regarding changes in future income, relative to current income, matter for their preferences for the environmental attributes and hence for WTP, and furthermore also matter for their marginal utility of money and hence for WTP.

To investigate if WTP, or more broadly stated preferences, is sensitive not only to current income but also to expected changes in future income, we collected a simple piece of information: In addition to asking respondents about their current household income, we asked them to indicate if they think their future household income would be lower than, similar to or higher than their current income.

Theory and evidence

The income sensitivity of WTP estimates

As pointed out by Kriström and Riera (1996), it is sometimes casually argued that environmental quality is a luxury good, with an income elasticity of demand larger than one. This implies that demand for environmental goods, e.g. organic produce, should grow disproportionately fast as incomes rise. Addressing the value of non-marketed environmental goods, this aspect of income effects does not translate easily. Kriström and Riera (1996) note that because changes in environmental quality tend to be public goods and, from the perspective of the individual, come in rationed quantities so the quantity provided cannot be chosen individually, one cannot derive an analogous measure. Hence, they define and investigate instead the income elasticity of WTP for environmental improvements, an approach also used by later studies (Flores and Carson, 1997; Hökby and Söderqvist, 2003). Specifically, they define $s = WTP(y)/y$ where y is income of the individual, and stress that when s is regressed on income